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November 29, 2001

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Atty. Docket No.: P67363US0  
CUSTOMER NUMBER: 00136

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is a CONTINUATION application of PCT/IE00/00070 filed on June 1, 2000 of Owen SULLIVAN and John DOYLE for BEARER ACCESS IN WIRELESS COMMUNICATION SYSTEMS. The application comprises a 18-page specification, including 16 claims (2 independent) and Abstract, and 5 sheets of drawings.

Accompanying the application for filing is:

Preliminary Amendment; and

A certified copy of Ireland Application No. 990451, filed June 1, 1999, the priority of which is claimed under 35 U.S.C. §119.

This application is being filed under 37 C.F.R. §1.53 (without Declaration or Filing Fee). The required Declaration and Filing Fee will be filed subsequently.

Should a fee be necessary to obtain a filing date, e.g. paying the basic fee for nationalizing a PCT application, the Commissioner is hereby authorized to charge payment of any fees set forth in §§1.17 or 1.492 during the pendency of this application, or credit any overpayment, to Deposit Account No. 06-1358. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

JACOBSON HOLMAN PLLC

By Jonathan L. Scherer Reg. No. 22,769  
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cmf



Patents Office  
Government Buildings  
Hebron Road  
Kilkenny



I HEREBY CERTIFY that annexed hereto is a true copy of documents filed in connection with the following patent application:

Application No. 990451

Date of Filing 1 June 1999

Applicant MARKPORT LIMITED, an Irish company of Custom House Plaza 5, Harbourmaster Place, Dublin 1, Ireland.

Dated this 20 day of November 2001.

An officer authorised by the  
Controller of Patents, Designs and Trademarks.

990451

FORM NO. 1

REQUEST FOR THE GRANT OF A PATENT

PATENTS ACT, 1992

The Applicant(s) named herein hereby request(s)

X the grant of a patent under Part II of the Act

the grant of a short-term patent under Part III of the Act  
on the basis of the information furnished hereunder.

1. Applicant(s)

Name

Markport Limited

Address

Custom House Plaza 5  
Harbourmaster Place  
Dublin 1  
Ireland

Description/Nationality

An Irish company

2. Title of Invention

"Bearer Access in Wireless Communication Systems"

3. Declaration of Priority on basis of previously filed application(s) for same invention (Sections 25 & 26)

Previous filing date

Country in or for  
which filed

Filing No.

4. Identification of Inventor(s)

Name(s) of person(s) believed  
by Applicants(s) to be the inventor(s)

SULLIVAN, Owen an Irish citizen of Pollnarooma, Knocknacarra, Galway,  
Ireland

DOYLE, John an Irish citizen of 74 Deepdales, Southern Cross Road, Bray,  
County Wicklow, Ireland

990451

5. Statement of right to be granted a patent (Section 17(2) (b))

The applicant derives the rights to the invention by virtue of a general Deed of Assignment dated May 25, 1999.

6. Items accompanying this Request – tick as appropriate

- (i) ☒ prescribed filing fee (£100.00)
- (ii) ☒ specification containing a description and claims  
☐ specification containing a description only  
☒ Drawings referred to in description or claims
- (iii) ☐ An abstract
- (iv) ☐ Copy of previous application (s) whose priority is claimed
- (v) ☐ Translation of previous application whose priority is claimed
- (vi) ☒ Authorisation of Agent (this may be given at 8 below if this Request is signed by the Applicant (s))

7. Divisional Application (s)

The following information is applicable to the present application which is made under Section 24 –

Earlier Application No: .....

Filing Date: .....

8. Agent

The following is authorised to act as agent in all proceedings connected with the obtaining of a patent to which this request relates and in relation to any patent granted -

Name

Address

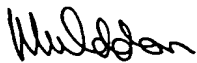
John A. O'Brien & Associates

The address recorded for the time being in the Register of Patent Agents, and currently Third Floor, Duncairn House, 14 Carysfort Avenue, Blackrock, Co. Dublin, Ireland.

9. Address for Service (if different from that at 8)

As above

Signed



John A. O'Brien & Associates

Date

May 31, 1999



090451

- 1 -

"Bearer Access in Wireless Communication Systems"

Introduction

- 5 The invention relates to access of servers to Wireless application Protocol (WAP) bearers.

At present, it is known to provide an interface, and a development environment for such an interface, which allows access to Short Message Service Centres (SMSCs) via the (Short Message Pier-to-Pier) SMPP protocol. Such products have been supplied by Logica Aldiscon. These products are very effective for the particular interfacing involved. However, there is a need for an interface and associated development toolkit which allows access to a range of bearers for network flexibility and provides WDP layer functionality. The invention addresses this need.

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Statements of Invention

According to the invention, there is provided a developer's toolkit comprising:

20 means for generating a wireless server interface, and

means for generating a bearer interface to allow the wireless server access a bearer

25 In one embodiment, the toolkit comprises means for generating an interface with a Wireless Datagram Protocol (WDP) layer of a wireless server.

Preferably, said means comprises an API providing IPC or CORBA-based communication with the underlying bearer.

30

In another embodiment, said means for generating a bearer interface comprises means for allowing selection of a bearer interface protocol

5 In a further embodiment, the toolkit comprises a configuration file to specify configuration items such as specific bearers or bearer addresses.

Preferably, the toolkit comprises means for providing billing functionality on a per datagram packet basis.

10 In another embodiment, the toolkit comprises means for performing Segmentation and Reassembly of WDP datagrams to match bearer MTU capabilities.

#### Detailed Description of the Invention

15 The invention will be more clearly understood from the following description of some embodiments thereof, given by way of example only with reference to the accompanying drawing which is an overview diagram showing operation of interfaces of the invention.

Referring to the drawing, a set of interfaces 1 allow access by wireless servers 2 to  
20 bearers 3. In the embodiment illustrated, the servers 2 include:-

- a WAP server 5 hosting prototype application and content,
- a WAP proxy 6 performing protocol conversion and content encoding, and
- 25 - a WTA server 7 hosting telephony based applications.

The servers are connected to a Web server 8 via a Firewall 9.

30 The bearers are in this embodiment:-

- a Circuit Switched Data bearer 10,
- an Express Messaging SMSC bearer 11,
- 5 - an SMSC bearer 12, and
- a USSD gateway bearer 13.
- 10 - a CB Gateway

Each interface 1 communicates with the Wireless Datagram Protocol (WDP) layer of the associated server. The interfaces are developed using a toolkit of the invention which incorporates a UDP-like API, and is provided as “C” function calls, “C++” methods, or  
15 Java applets. The toolkit provides an API to higher layers. These sockets support socket, bind, and “sendto” calls.

The toolkit also allows selection of an appropriate bearer interface protocol. The interface protocol include the following:-

- 20 - SMS bearer: SMPP
- USSD bearer: SMPP
- 25 - Circuit Switched Data bearer: UDP over IP
- CBC bearer; a Broadcast Message Submission Protocol.

The toolkit comprises a transport layer API which allows an upper layer of the WAP stack on the server side to make a bearer selection. A C/UNIX example of this is shown below:

5        wdp\_ioctl(socket\_number,BEARER, GSM\_SMS):/\* Choose GSM SMS bearer \*/

Choices for bearer selection remain in effect until formally closed or another bearer is chosen using the selection process. This means that the application does not have to perform bearer selection for each packet.

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The range of allowed values for bearer type match those defined in the WDP (Wireless Datagram Protocol). However, not all bearer types are supported on all networks. For example, IS-136 R-Data will not be supported as a bearer in GSM networks. The WDP layer contains a configuration file in which the bearers supported can be specified (via a standard Web browser by the System administrator). If an application chooses a bearer

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that is not supported, an error will be returned.

A configuration file is provided with the toolkit, which is modifiable via a standard Web browser. This configuration file is used to specify, for example, configuration items such as the TCP/IP address of the SMSC. The toolkit libraries can optionally record traffic information for billing purposes. The billing information is on a per WDP datagram packet and includes source and destination WDP layer address and ports in the billing record. The toolkit supports the WCMP protocol specified by the WAP Forum.

20

Also, the toolkit supports Segmentation and Re-assembly of WDP datagrams to match the bearer MTU as well as all the mandatory WDP features defined in the WDP Static Conformance Clause.

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Both long and short fragmentation information elements are supported.

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Claims

1. A developer's toolkit comprising:
  - 5 means for generating a wireless server interface, and  
  
means for generating a bearer interface to allow the wireless server access a bearer
- 10 2. A toolkit as claimed in claim 1, wherein the toolkit comprises means for generating an interface with a Wireless Datagram Protocol (WDP) layer of a wireless server.
3. A toolkit as claimed in claim 2, wherein said means comprises an API providing  
15 IPC or CORBA-based communication with the underlying bearer..
4. A toolkit as claimed in any preceding claim, wherein said means for generating a bearer interface comprises means for allowing selection of a bearer interface  
20 protocol
5. A toolkit as claimed in any preceding claim, wherein the toolkit comprises a configuration file to specify configuration items such as specific bearers or bearer  
addresses.
- 25 6. A toolkit as claimed in any preceding claim, wherein the toolkit comprises means for providing billing functionality on a per datagram packet basis.
7. A toolkit as claimed in any preceding claim, wherein the toolkit comprises means  
30 for performing Segmentation and Reassembly of WDP datagrams to match a bearer capabilities.

8. A wireless server/bearer access interface whenever developed by a toolkit as claimed in any preceding claim.
9. A developer's toolkit substantially as described with reference to the drawings.

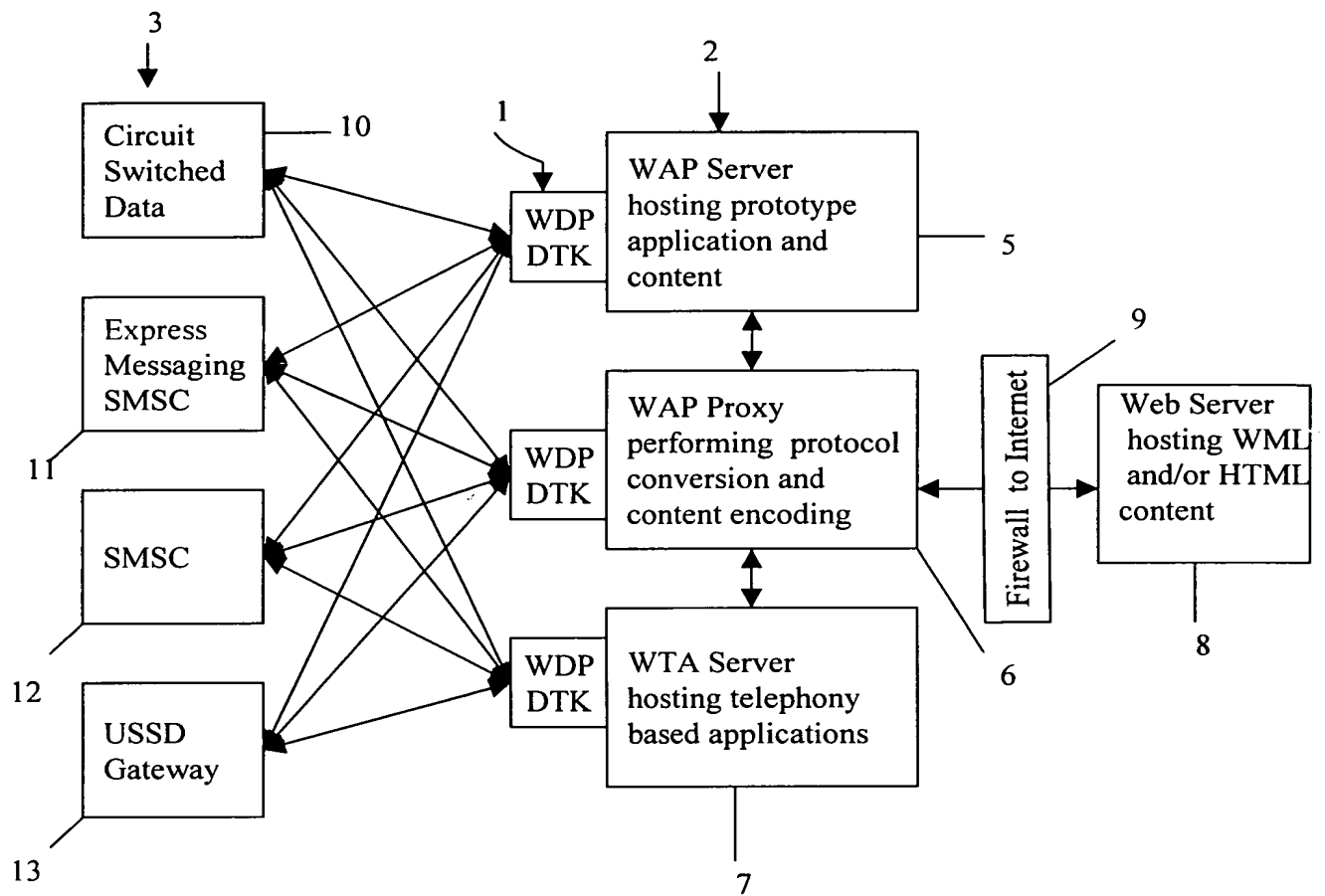


Fig. 1